STAFF REPORT

INDIVIDUAL WASTE DISCHARGE REQUIREMENTS FOR MICHAEL VANDER DUSSEN, DBA DOUBLE DIAMOND DAIRY MERCED COUNTY

Consideration of Waste Discharge Requirements for the Double Diamond Dairy.

INTRODUCTION

Michael Vander Dussen (Discharger) owns and operates the Double Diamond Dairy located at 729 E Jefferson Rd in El Nido, Merced County. The Discharger expanded his herd size at his dairy to include: 4,800 milking cows, 720 dry cows, 1,340 bred heifers, 700 heifers aged one year to breeding, 1,540 three-to-twelve month calves and 770 baby calves for a total herd size of 9,870 Holstein animals. The Double Diamond Dairy was expanded prior to the adoption of the General Order for Existing Milk Cow Dairies Order No. R5-2007-0035 (General Order). Therefore, the Discharger was not eligible for coverage under the General Order and individual Waste Discharge Requirements (WDRs) were required for the dairy. The Tentative Order is based off of the requirements set forth in the General Order.

BACKGROUND

Double Diamond Dairy is located on 2,317 acres in Merced County, south of the city of El Nido. The facility includes a milking parlor, freestall barns, corrals, manure storage and drying areas, a transfer pit, two mechanical separators on concrete slabs, three settling ponds, three wastewater storage lagoons, and feed storage areas. Liquid and solid manure at the dairy is land-applied to 1,990 of the 2,129 acres available for agricultural production.

The site of the dairy is zoned A-1 (General Agricultural). It has been a dairy since November 1999. The property is generally flat lying, and is underlain by soils comprised of the Fresno, Pachappa, and Hanford series.

Waste generated at the facility consists of manure, barn washwater, and rainfall and runoff that comes into contact with manure or other waste. Manure from the animal housing areas is estimated at 1,760,917 cubic feet of manure wastewater over the 120-day storage period (December 1 through March 30), once 15% of the solids are removed by the mechanical separators. Operation of the milk barn will generate 23 gallons of wastewater per milk cow per day, or 110,400 gallons per day for the expanded milking herd of 4,800 cows. An additional 20,000 gallons per week of fresh water is used to wash down the calf holding areas. Over 120 days, the volume of barn wastewater generated will be 1,813,596 cubic feet. Rainfall onto impervious areas of the dairy, onto the ponds, and onto corrals is estimated at 3,129,195 cubic feet over the December through March storage

period, using average rainfall figures and including rainfall from one 25-year, 24-hour storm.

The total amount of wastewater requiring storage over the 120-day maximum storage period, after removing losses due to evaporation and adding one 25-year 24-hour storm, is 6,703,708 cubic feet.

Wastewater is passed through a process pit, two mechanical solid separators located on concrete slabs, then into three side-by-side settling ponds, and finally into the three wastewater storage lagoons. The solids and excess manure in corrals is stockpiled on the concrete slab at the solids separator and then used on site. A portion of the solids may be dried and used as animal bedding.

The wastewater from the mechanical separator gravity flows into the three settling ponds and then into the three storage lagoons. The three settling ponds all have dimensions of 430 feet long by 100 feet wide, are 25 feet deep and have 1:1 side slopes. The wastewater storage lagoons have dimensions of 100 feet long by 40 feet wide, 650 feet long by 160 feet wide, and 616 feet long by 300 feet wide. The lagoons are 25 feet, 35 feet, and 40 feet deep and all three have 1:1 side slopes. The total storage capacity of the three settling ponds and three lagoons combined, allowing for two feet of freeboard is 10,332,534 cubic feet.

Wastewater and solid manure is applied to land at agronomic rates to grow corn, wheat, alfalfa and sudan grass in accordance with a certified Nutrient Management Plan.

All fields that receive solid manure or liquid wastewater have tailwater recovery systems. The Discharger conducts metering to determine application rates from the storage ponds to the cropland.

There are 29 existing agricultural supply wells and 6 domestic wells on the property. Four monitoring wells have been installed, and one well owned by Mr. Guilherme Brasil, the Discharger's neighbor, will be monitored per an agreement between the Discharger and Mr. Brasil. These wells monitor upgradient groundwater quality (unaffected by dairy operations) and groundwater downgradient of the location of corrals, land application areas, and the wastewater storage lagoons. Regional ground water flow is to the south toward the Chowchilla River and the depth to groundwater at the facility ranged from 86 to 95 feet in March 2008.

Sampling of the monitoring wells was conducted for the EIR, and again in September 2004, November 2005, March 2007, August 2007, and March 2008. The results indicate that groundwater upgradient of the dairy has nitrogen levels above the Maximum Contaminant Levels (MCLs). The monitoring wells downgradient of the production area have not shown much fluctuation in nitrogen levels over time; however, the levels are above the MCLs, which is expected due

to the generally high nitrogen levels in groundwater in the area. The other constituents analyzed in the groundwater did not appear to indicate groundwater pollution.

TENTATIVE WDRS

The tentative WDRs are based on the General Order for Existing Milk Cow Dairies Order No. R5-2007-0035 (General Order) and will permit Double Diamond Dairy to house the number of cows allowed under the EIR approved by Merced County. The facilities constructed at the dairy are all sized to house the number of animals allowed under the EIR. The Tentative Order also incorporates mitigation measures set forth in the Final Environmental Impact Report that was adopted by Merced County.

The Tentative Order requires the Discharger to properly manage waste at the dairy so that all waste remains contained at the facility and does not enter surface water, and that waste is applied at agronomic rates to cropland. This management is confirmed through a Nutrient Management Plan (NMP) and Waste Management Plan (WMP), and groundwater monitoring. The NMP and WMP must be submitted to the Regional Board no later than 27 February 2009.

In addition to waste management, the Tentative Order requires the Discharger to conduct evaluations on the domestic and agricultural wells and on the wastewater storage lagoons. The evaluation of the domestic and agricultural wells will involve evaluation of wells within 100 feet of locations where manure and/or wastewater is land applied and a determination of preventive measures that are necessary for each well to avoid contamination from manure and/or wastewater. This evaluation will be incorporated into the NMP.

The Tentative Order requires a Best Practicable Treatment and Control (BPTC) Technical Evaluation to determine if the existing construction of the wastewater lagoons and settling ponds is protective of groundwater quality and preventive of degradation. The BPTC Technical Evaluation will involve groundwater monitoring and a statistical analysis of collected data to determine if the lagoons and ponds are impacting groundwater. The technical evaluation will require quarterly monitoring of the four groundwater monitoring wells at the facility for a 2-year period and an intra-well statistical analysis (an evaluation of the change in each constituent in a single well over time) will be conducted on the collected data. Should the results of the statistical analysis determine that there is a measurably significant impact to the groundwater, the Discharger will be required to develop a BPTC work plan for the wastewater storage lagoons and settling ponds proposing a liner design for the lagoons and/or ponds.

The Tentative Order also sets Interim Groundwater Limitations for the facility until the BPTC Technical Evaluation is completed. The interim limitations reflect the fact that the groundwater underlying the facility has already been adversely affected by upgradient sources and are based on the concentration of the

relevant constituents in the monitoring well located at the upgradient edge of the facility, MW-1. These interim groundwater limitations are to be applied at the shallowest groundwater beneath the facility. The constituent concentrations specified in the Tentative Order include:

a. Nitrate as nitrogen of 26 mg/L (background);
b. Chloride of 250 mg/L (Title 22 CCR Secondary MCL);
c. Total Dissolved Solids of 790 mg/L (background); and
d. Electrical Conductivity of 1209 umhos/cm (background).

The Monitoring and Reporting Program (MRP) in the WDRs requires the Discharger to conduct visual inspections of the facility, nutrient monitoring, discharge monitoring, and groundwater monitoring. Visual inspections are required for the production area and land application areas at the dairy. Nutrient monitoring requires sampling of wastewater, manure, plant tissue, soil, and irrigation water for a variety of constituents. Storm water discharges to surface water from each land application area is required to be sampled during the first storm event of the wet season and during the peak storm season each year from one third of the land application areas.

The Discharger is also required to sample the 6 domestic and 29 agricultural supply wells and the 4 monitoring wells to characterize existing groundwater quality. In addition, the Discharger shall provide data from the Guilherme Brasil Dairy monitoring well (MW-1). The domestic and agricultural supply wells are required to be sampled semiannually for electrical conductivity and nitrate-nitrogen; and annually for general minerals, ammonium-nitrogen, total dissolved solids, and fecal coliform. The monitoring wells will be sampled semiannually at the times of expected highest and lowest water table levels for electrical conductivity, pH, nitrate-nitrogen, ammonium-nitrogen, total dissolved solids, fecal coliform, phosphorous, and potassium. For the first two years after the adoption of this Order, the monitoring wells will be sampled at times midway between the semiannual sampling for electrical conductivity and nitrate-nitrogen. In addition the monitoring wells will be sampled quarterly for two years and annually thereafter, for general minerals.

HISTORY

As part of its development of a General Order for existing milk cow dairies, the Central Valley Regional Board required all existing dairies to file a Report of Waste Discharge (ROWD) by 17 October 2005 to document conditions at each dairy as of that date, including the number of mature dairy cows. The ROWD also requested the maximum number of mature dairy cows at each dairy within the preceding 12 months period. The maximum number of mature dairy cows that can be at an existing dairy is limited to 115% of the larger of these two numbers for the dairy to qualify for coverage under the General Order. Dairies in

existence as of October 2005 that want to increase beyond this number must get individual Waste Discharge Requirements.

An Environmental Impact Report (EIR) for the expanded herd size was prepared for Double Diamond Dairy by Merced County Department of Planning and Community Development and was certified in December 2005. Milking of the expanded herd size began in September 2007.

A Report of Waste Discharge dated 11 March 2008 was submitted for the expanded dairy. On 2 June 2008 the Regional Board released draft WDRs for public review. Comments were submitted by The Source Group, Inc. on behalf of Michael Vander Dussen, The Law Office of Thomas H. Terpstra on behalf of Michael Vander Dussen, and the Environmental Law Foundation on behalf of the Environmental Law Foundation, AGUA, and California Sport Fishing Alliance. In general, the comments received addressed the monitoring requirements, Best Practicable Treatment and Control requirements, and the interim groundwater limitations described in the Tentative Order. A complete response to comments is provided in the agenda package. The Tentative Order was updated with minor changes to reflect the comments received.

RECOMMENDATION

Staff recommends that the Regional Board approve the Tentative Waste Discharger Requirements for Double Diamond Dairy.